1 Econ 140 - Problem Set 5

Fall Semester 2002
Prof. Andrew Hildreth

Part of the problem with the returns to schooling estimates is that it suffers from simultaneity bias. Is it that people obtain a certain number of years of education and then get offered a wage based on that; or is it that people select a certain years of education because they want a better job with improved pay later on in life. In 1972, Zvi Griliches suggested a means of allowing for this simultaneity bias. Use the education of the father and mother. While parental education would be correlated with pay and education for the off-spring, it would be sufficiently different to provide a valid instrument.

There are six variables that are part of the data set. payhour = respondents hourly pay; sex = 1 if male, =2 if female; age = age of the respondent; schend = years of schooling for the respondent; schendm = years of schooling of the respondents mother; schendf = years of schooling of the respondents father.

1. Estimate the returns to schooling by OLS using the following model:

$$\ln W_i = a + b_1 S_i + b_2 X_i + b_3 X_i^2 + b_4 F_i + \epsilon_i$$

where $W =$ hourly pay; $S =$ years of schooling; $X =$ age; $F =$ dummy variable which equals one if female and zero otherwise. Interpret the coefficients: a $b_1$, b $b_2$ and $b_3$; c $b_4$.

2. Estimate the returns to schooling by Two Stage Least Squares (TSLS) using the same model, where the years of schooling for the individual are the mothers and fathers years of schooling. Interpret the results.

3. Undertake a Hausman over-identification test for instrument validity. Does Griliches idea work for this data set?

4. Why would panel data be of little help in this situation if we think there are unobserved individual fixed effects? (Note that there may be unobserved fixed effects correlated with years of schooling. An individual may get different qualifications, different grades, even though they have the same years of education). How does the instrument help over come this problem, if at all?